2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD) INCREASES THE EXPRESSION OF CYCLOOXYGENASE-2 AND AROMATASE CYTOCHROME P 450 IN HUMAN ENDOMETRIUM

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Objective: To investigate the role of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) on eutopic endometrium by stromal cell culture.

Materials: Human endometrial tissues obtained by hysterectomy specimens from 16 women with estrogen dependent diseases (endometriosis (n=4), adenomyosis (n=5), uterine fibroids (n=7)) and 5 women who had undergone hysterectomy for carcinoma in situ of uterine cervix. Endometrial stromal cells were cultured under the following conditions: DMEM/F12 (10% FBS, 1 nM E2 and 100 nM P4). TCDD (10 nmol/l) and TNF-alpha (0.1 ng/ml) were added according to experimental purposes. The protein expression of aromatase cytochrome P450 and COX-2 was examined by Western blot.

Result(s): In study group, the COX-2 protein in stromal cells cultured with TCDD and TCDD plus TNF-a was significantly increased. (control; 0.81 ± 0.26, TCDD; 1.04 ± 0.38, TCDD plus TNF-a; 1.30 ± 0.90, p<0.05). And the aromatase P450 protein in stromal cells cultured with TNF-a and TCDD and TCDD plus TNF-a was significantly increased (control; 0.76 ± 0.18 vs. TNF-a 0.93 ± 0.34, TCDD; 0.97 ± 0.41, TCDD plus TNF-a; 1.16 ± 0.41 p<0.05). In the stromal cell cultured with TCDD plus TNF-a than TNF-a and TCDD alone, the aromatase protein was significantly increased (p<0.05). There was a significant difference of COX-2 protein in stromal cells cultured with TNF-a between the control group and estrogen dependent disease group (0.74 ± 0.13 vs. 1.00 ± 0.34, p<0.05).

Conclusion: Treatment with the TCDD increased aromatase cytochrome P450 and COX-2 on the eutopic endometrium of patients with and without estrogen dependent diseases, by endometrial stromal cells in culture.